

# Yulin Wang

Ph.D. Student, Tsinghua University

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## Education

### Department of Automation, Tsinghua University

Ph.D. Student in Pattern Recognition and Machine Learning

2019 – 2025 (expected)

- Advisor: Prof. Cheng Wu and Prof. Gao Huang.

### School of Automation Science and Electrical Engineering, Beihang University

B.Eng. in Automation

2015 – 2019

- GPA **Top 1/231**.
- Awarded “**Shen Yuan**” Medal (沈元奖章) by Beihang Univ. (**Top 10** of 18,000+ undergraduate students).

## Research Experience

### Berkeley Deep Drive, University of California, Berkeley

Research Intern

2018

- Advisor: Dr. Ching-Yao Chan.

### Lab of Intelligent Manufacturing, Beihang University

Research Intern

2017 – 2018

- Advisor: Prof. Fei Tao.

## Publications

Yulin Wang has published a number of works in top-tier conferences & journals in the fields of machine learning and computer vision, including **TPAMI** (4), **IJCV** (1), **NeurIPS** (3), **ICLR** (1), **ICCV** (6), **CVPR** (5), and **ECCV** (1). Two of his papers were selected for “**Oral Presentation**” (acceptance rate: 2-4%) by ICCV and CVPR, respectively. He has collected **more than 1,700 citations** according to **Google Scholar**. In addition, he has actively released the code for his published papers, and has received **more than 1.2k stars** on **GitHub**. The detailed paper list is presented in the following.

### I. Selected Publications – Peer-reviewed Journal Papers

- [1] Chaoqun Du, **Yulin Wang**, Shiji Song, Gao Huang  
**Probabilistic Contrastive Learning for Long-Tailed Visual Recognition**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**, Q1, IF=23.6), 2024
- [2] Gao Huang\*, **Yulin Wang\***, Kangchen Lv, Haojun Jiang, Wenhui Huang, Pengfei Qi, Shiji Song  
(\*co-first author with my advisor)  
**Glance and Focus Networks for Dynamic Visual Recognition**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**, Q1, IF=23.6), 2023
- [3] **Yulin Wang**, Gao Huang, Shiji Song, Xuran Pan, Yitong Xia, Cheng Wu  
**Regularizing Deep Networks with Semantic Data Augmentation**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**, Q1, IF=23.6), 2022
- [4] Yizeng Han, Gao Huang, Shiji Song, Le Yang, Honghui Wang, **Yulin Wang**  
**Dynamic Neural Networks: A Survey**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**, Q1, IF=23.6), 2022

- [5] **Yulin Wang**, Rui Huang, Gao Huang, Shiji Song, Cheng Wu  
**Collaborative Learning with Corrupted Labels**  
*Neural Networks (NN, Q1, IF=7.8)*, 2020
- [6] **Yulin Wang**, Yongping Zhang, Fei Tao, Tingyu Chen, Ying Cheng, Shunkun Yang  
**Logistics-aware Manufacturing Service Collaboration Optimisation towards Industrial Internet Platform**  
*International Journal of Production Research (IJPR, Q1, IF=9.2)*, 2019

## II. Selected Publications – Peer-reviewed Conference Papers

- [7] Zanolin Ni\*, **Yulin Wang\***, Renping Zhou, Jiayi Guo, Jinyi Hu, Zhiyuan Liu, Shiji Song, Yuan Yao, Gao Huang  
*(\*co-first author)*  
**Revisiting Non-Autoregressive Transformers for Efficient Image Synthesis**  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024
- [8] **Yulin Wang**, Yang Yue, Rui Lu, Tianjiao Liu, Zhao Zhong, Shiji Song, Gao Huang  
**EfficientTrain: Exploring Generalized Curriculum Learning for Training Visual Backbones**  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- [9] Zanolin Ni\*, **Yulin Wang\***, Jiangwei Yu, Haojun Jiang, Yue Cao, Gao Huang  
*(\*co-first author)*  
**Deep Incubation: Training Large Models by Divide-and-Conquering**  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- [10] **Yulin Wang**, Yang Yue, Xinhong Xu, Ali Hassani, Victor Kulikov, Nikita Orlov, Shiji Song, Humphrey Shi, Gao Huang  
**AdaFocus V3: On Unified Spatial-temporal Dynamic Video Recognition**  
*European Conference on Computer Vision (ECCV)*, 2022
- [11] **Yulin Wang**, Yang Yue, Yuanze Lin, Haojun Jiang, Zihang Lai, Victor Kulikov, Nikita Orlov, Humphrey Shi, Gao Huang  
**AdaFocus V2: End-to-End Training of Spatial Dynamic Networks for Video Recognition**  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022
- [12] **Yulin Wang**, Rui Huang, Shiji Song, Zeyi Huang, Gao Huang  
**Not All Images are Worth 16x16 Words: Dynamic Transformers for Efficient Image Recognition**  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2021
- [13] **Yulin Wang**, Zhaoxi Chen, Haojun Jiang, Shiji Song, Yizeng Han, Gao Huang  
**Adaptive Focus for Efficient Video Recognition**  
*IEEE/CVF International Conference on Computer Vision (ICCV Oral)*, 2021
- [14] **Yulin Wang**, Zanolin Ni, Shiji Song, Le Yang, Gao Huang  
**Revisiting Locally Supervised Learning: An Alternative to End-to-end Training**  
*International Conference on Learning Representations (ICLR)*, 2021
- [15] **Yulin Wang**, Kangchen Lv, Rui Huang, Shiji Song, Le Yang, Gao Huang  
**Glance and Focus: A Dynamic Approach to Reducing Spatial Redundancy in Image Classification**  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2020
- [16] **Yulin Wang**, Xuran Pan, Shiji Song, Hong Zhang, Cheng Wu, Gao Huang  
**Implicit Semantic Data Augmentation for Deep Networks**  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2019

### III. Full Publication List

- [17] Mixue Xie, Shuang Li, Kaixiong Gong, **Yulin Wang**, Gao Huang  
**Adapting Across Domains via Target-Oriented Transferable Semantic Augmentation Under Prototype Constraint**  
*International Journal of Computer Vision (IJCV, Q1, IF=19.5)*, 2023
- [18] Yifan Pu, Yizeng Han, **Yulin Wang**, Junlan Feng, Chao Deng, Gao Huang  
**Fine-grained Recognition with Learnable Semantic Data Augmentation**  
*IEEE Transactions on Image Processing (TIP, Q1, IF=10.6)*, 2023
- [19] Ziwei Zheng, Le Yang, **Yulin Wang**, Miao Zhang, Lijun He, Gao Huang, Fan Li  
**Dynamic Spatial Focus for Efficient Compressed Video Action Recognition**  
*IEEE Transactions on Circuits and Systems for Video Technology (TCSVT, Q1, IF=8.4)*, 2023
- [20] **Yulin Wang**, Yizeng Han, Chaofei Wang, Shiji Song, Qi Tian, Gao Huang  
**Computation-efficient Deep Learning for Computer Vision: A Survey**  
*Cybernetics and Intelligence (sponsored by the Department of Automation, Tsinghua University – 清华大学自动化系主办)*, 2023
- [21] **Yulin Wang**, Jiayi Guo, Jiangshan Wang, Cheng Wu, Shiji Song, Gao Huang  
**Meta-Semi: A Meta-Learning Approach for Semi-Supervised Learning**  
*CAAI Artificial Intelligence Research (sponsored by CAAI – 中国人工智能学会主办)*, 2022
- [22] Yizeng Han, Dongchen Han, Zeyu Liu, **Yulin Wang**, Xuran Pan, Yifan Pu, Chao Deng, Junlan Feng, Shiji Song, Gao Huang  
**Dynamic Perceiver for Efficient Visual Recognition**  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- [23] Yifan Pu, Yiru Wang, Zhuofan Xia, Yizeng Han, **Yulin Wang**, Weihao Gan, Zidong Wang, Shiji Song, Gao Huang  
**Adaptive Rotated Convolution for Rotated Object Detection**  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- [24] Wenxuan Ma, Shuang Li, Jinming Zhang, Chi Harold Liu, Jingxuan Kang, **Yulin Wang**, Gao Huang  
**Borrowing Knowledge From Pre-trained Language Model: A New Data-efficient Visual Learning Paradigm**  
*IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- [25] Wenxuan Ma, Jinming Zhang, Shuang Li, Chi Harold Liu, **Yulin Wang**, Wei Li  
**Making the Best of Both Worlds: A Domain-Oriented Transformer for Unsupervised Domain Adaptation**  
*ACM International Conference on Multimedia (ACM MM)*, 2022
- [26] Shuang Li, Mixue Xie, Kaixiong Gong, Chi Harold Liu, **Yulin Wang**, Wei Li  
**Transferable Semantic Augmentation for Domain Adaptation**  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR Oral)*, 2021
- [27] Shuang Li, Kaixiong Gong, Chi Harold Liu, **Yulin Wang**, Feng Qiao, Xinjing Cheng  
**MetaSAug: Meta Semantic Augmentation for Long-Tailed Visual Recognition**  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021
- [28] Le Yang, Haojun Jiang, Ruojin Cai, **Yulin Wang**, Shiji Song, Gao Huang, Qi Tian  
**CondenseNet V2: Sparse Feature Reactivation for Deep Networks**  
*IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021

## Industrial Applications

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### China Mobile Research Institute

Project – *Efficient Inference of Deep Learning Models based on Dynamic Networks* 2021 – Present

- Relevant papers: [2, 4, 10-13, 15].
- *Detecting harmful online images/videos (e.g., violent, pornographic, or other adult-only contents):*
  - **Improving real throughput by 3.4x** without sacrificing accuracy or increasing inference cost.
- *Smart city scenario – real-time surveillance systems (e.g., detecting the violent behaviors of pedestrians):*
  - **Reducing real latency by 3.0x** on practical edge computing hardware without sacrificing accuracy.
- **Award for Frontier Exploration**, China Mobile Research Institute, 2023

### Ministry of Science and Technology of China under Grant 2018AAA0101604

Sub-project – *Data-efficient Machine Learning for Production Line Status Monitoring* 2018 – 2023

- Relevant papers: [1, 3, 16].
- *Fault diagnosis for real production lines:*
  - Improving the generalization performance of deep networks significantly.

## Selected Awards and Honors

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- **National Scholarship (国家奖学金), Ministry of Education of China** 2023  
(4th time, Top 2% in Tsinghua University)
- **ByteDance Scholarship (字节跳动奖学金), ByteDance Ltd.** 2022  
(10 PhD students in China)
- **Microsoft Research Asia Fellowship Award (“微软学者”奖学金), Microsoft Research Asia** 2022  
(12 PhD students in the Asia-Pacific region)
- **“Li Yanda” Scholarship (李衍达励学基金), Tsinghua University** 2022  
(4 PhD students in the Department of Automation, Tsinghua University)
- **Baidu Scholarship (百度奖学金), Baidu Inc.** 2021  
(10 PhD students worldwide)
- **CCF-CV Outstanding Young Researcher Award (CCF-CV 学术新锐奖), China Computer Federation (CCF)** 2021  
(3 PhD/MS students in China)
- **National Scholarship (国家奖学金), Ministry of Education of China** 2021  
(3rd time, Top 2% in Tsinghua University)
- Outstanding Oral Presentation, Doctoral Students Forum, Tsinghua University 2021
- Travel Award, NeurIPS 2019
- **“Shen Yuan” Medal (沈元奖章), Beihang University** 2018  
(Top 10 of 18,000+ undergraduate students in Beihang University)
- **National Scholarship (国家奖学金), Ministry of Education of China** 2018  
(2nd time, Top 2% in Beihang University)
- **National Scholarship (国家奖学金), Ministry of Education of China** 2017  
(1st time, Top 2% in Beihang University)
- **“Gong Xin” Innovation Scholarship (工信部创新奖学金), Ministry of Industry and Information Technology of China** 2017  
(Top 1/231 in Beihang University)
- **First Prize, “Zhou Peiyuan” Mechanics Competition for Undergraduate Students (全国周培源大学生力学竞赛一等奖)** 2017  
(Top 0.3%)

- First Prize, National Undergraduate Mathematical Contest in Modeling (高教社杯全国大学生数学建模竞赛一等奖) 2017  
(**Top 0.2%**)
- Scholarship for Outstanding Academic Performance, Beihang University 2016 – 2019  
(**Top 5% in Beihang University**)

## Academic Service

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- Reviewer for TPAMI, IJCV, TCYB, TNNLS, TCSVT, Pattern Recognition, TMLR, ...
- Reviewer for ICML, NeurIPS, ICLR, CVPR, ICCV, ECCV, AAAI, ...  
- **Outstanding Reviewer**, CVPR, 2021
- Co-sponsor of the Special Interest Group on Dynamic Neural Networks, Beijing Academy of Artificial Intelligence (BAAI).  
- <https://littlepure2333.github.io/dynamic-neural-network>  
- Core members include more than 20 researchers from 8 universities. We have organized more than 30 academic reports and tutorials. The cumulative audience has exceeded 1,000.

## Invited Talks and Presentations

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- 2023.02, School of Automation, Beijing Institute of Technology, Vision Transformers Meet Dynamic Inference
- 2021.12, PRCV 2021, Dynamic Deep Networks for Reducing Spatial Redundancy
- 2021.10, School of Computer Science, Fudan University, Dynamic Deep Networks for Reducing Spatial Redundancy
- 2021.09, Aibee (invited by Yuanqing Lin), Semantic Data Augmentation
- 2021.06, AI Time, Locally Supervised Deep Learning
- 2021.04, Beijing Academy of Artificial Intelligence, Dynamic Image/Video Recognition
- 2021.03, ByteDance Ltd., Semantic Data Augmentation
- 2020.11, Qingyuan Seminar, Glance and Focus Networks
- 2020.06, Huawei Technologies Ltd., Glance and Focus Networks
- 2019.10, School of Computer Science and Engineering, Beihang University, Semantic Data Augmentation